

**Remarks**

Claims 1-41 and 43-105 are pending in the present application. Claims 1-5, 8-10, 15-32, 34-69, and 83-92 are rejected. Claims 70-82 are allowed. Claims 6, 7, 11-14, and 33 have been objected to. Claims 1, 31, 32, 43, and 83 are currently amended. Claims 93-105 are new. Claim 42 is canceled. Reconsideration is requested in view of the above changes and the following remarks.

**Consideration of IDS Submitted 16 Jan 2004:**

An IDS, substitute PTO Form 1449, and reference copies were filed with the Office on January 16, 2004. On January 20, 2004, the USPTO acknowledged receipt of the IDS and accompanying documentation by date-stamping and returning a postcard to the attorney for the Applicants. Despite acknowledging receipt of the IDS, PTO form 1449 (in duplicate), copies of the cited references, and the return postcard – the IDS was never considered by the Examiner, nor posted to PAIR.

The certificate of mailing included at the bottom of the IDS unintentionally, and incorrectly, indicated that the IDS mailing date was January 16, 2003. The Applicants submit that this document should have been dated January 16, 2004. Even, however, if the certificate of mailing is considered invalid, the date of receipt at the USPTO, January 20, 2004 far precedes the first office action in the present application.

As such, the Applicants have enclosed herewith a duplicate copy of the January 16, 2004 IDS submission and the USPTO stamped return postcard acknowledging receipt of the same. The Applicants respectfully request that the Examiner review the items listed in this IDS and make them of record in the instant application. No fee is included with this submission as the IDS was properly submitted prior to receipt of the first office action.

**Acknowledgement of Allowable Subject Matter:**

The Applicants graciously acknowledge the notice of allowable subject matter with respect to claims 70-82. The Applicants further appreciate the Examiner's acknowledgement that claims 18-21 would be allowable, but for being dependent upon a rejected base claim, if the specified conductivity suppressor was present in claim 18. Although the Applicants have amended claim 1 to require a conductivity suppressor, the Applicants have not incorporated claim 18 into claim 1. Rather, the Applicants added new claim 93 which represents a combination of the subject matter of original claim 1 and the elements of claim 18. In claim 93, the conductivity suppressor is no longer an optional element. Therefore, as new claim 93 satisfies the Examiner's requirements with respect to allowability, the Applicants submit that claim 93 is in condition for allowance.

New method claim 101 is a combination of claim 18 and original claim 43. For the reasons noted above, new claim 101, like claim 93, is in condition for allowance.

The Applicants further appreciate the Examiner's acknowledgement that claim 42 would be allowable if rewritten to overcome the 35 U.S.C. §112, 2<sup>nd</sup> rejection and to include all of the limitations of its base and intervening claims. To that end, original claim 42 has been canceled and rewritten as new claim 102. New claim 102 addresses the issues set forth by the Examiner and represents a combination of the subject matter of original claim 1 and the elements of claims 41 and 42. New claim 102 is therefore believed to be in condition for allowance.

**Support for Claim Amendments and New Claims:**

With respect to claim 1, support for a platform on which a membrane is placed can be found on page 15, line 33 to page 16, line 2. Support for the membrane being no more than coextensive in length and width than the platform can be found on page 16, lines 29-31. Support for "a first and a second wick end" can be found in original claim 42. Support for

the wick being disposed below and in direct contact with the membrane can be found on page 16, lines 25-29. Support for at least the first end of the at least one wick being in contact with the buffer can be found in original claim 42 as well as in the present specification on pages 16, lines 31-33 and page 18, lines 6-8.

Claim 43 has been amended to include the elements of the electrophoresis unit of claim 1.

Claim 83 has been amended to depend from claim 43. A reference to separation by isoelectric point in claim 83 was deleted as claim 43 encompasses this particular method of separation.

Claim 93 is new and is a combination of original claim 1 and claim 18. For a discussion of claim 93, see the section of this response entitled "Acknowledgement of Allowable Subject Matter."

Claim 94 is new and depends from claim 93. The text of claim 94, excluding the dependency, is identical to the text of original claim 22.

Claim 95 is new and depends from claim 93. The text of claim 95, excluding the dependency, is identical to the text of original claim 23.

Claim 96 is new and depends from claim 93. The text of claim 96, excluding the dependency, is identical to the text of original claim 24.

Claim 97 is new and depends from claim 95. The text of claim 95, excluding the dependency, is identical to the text of original claim 28.

Claim 98 is new and depends from claim 96. The text of claim 98, excluding the dependency, is identical to the text of original claim 34.

Claim 99 is new and is a combination of original claim 43 and a subset of base solvents previously claimed in claim 4. Claim 99 includes the subject matter of claims 6 and

7, which were acknowledged as being allowable but for being dependent upon a rejected base claim.

Claim 100 is new and is a combination of original claim 43 and a subset of conductivity enhancers previously claimed in claim 10. Claim 100 includes the subject matter of claims 11, 12, 13, and 14, which were acknowledged as being allowable but for being dependent upon a rejected base claim.

Claim 101 is new and is a combination of original method claim 43 and a subset of conductivity suppressors previously claimed in claim 18.

Claim 102 is new and is a combination of original claims 42, 41, and 1. For a discussion regarding claim 102, see the section of this response entitled "Acknowledgement of Allowable Subject Matter."

Claim 103 is new and describes an embodiment wherein one wick is utilized. Support for this embodiment can be found on page 16, lines 29-33.

Claim 104 is new and describes an embodiment wherein two wicks are utilized. Support for this embodiment can be found on page 16, line 33 through page 17, line 2.

Claim 105 is new and is the method of claim 43 further indicating that the at least one sample is mixed with a wetting agent comprising  $\epsilon$ -caprolactone. Support for mixture with a wetting agent comprising  $\epsilon$ -caprolactone can be found on page 18, lines 29-31; page 20, lines 27-30; and page 30, lines 28-31.

**Response to 35 U.S.C. §112, 2<sup>nd</sup>, Rejection:**

The Examiner indicated that claims 40-42 were rejected under 35 U.S.C. §112, 2<sup>nd</sup>, for lack of antecedent basis as the phrase "at least one electrophoresis unit" does not appear in claim 1. The Applicants respectfully direct the Examiner's attention to subpart (iii) of claim 1, which recites "an electrophoresis apparatus which comprises *at least one*

*electrophoresis unit* for containing the buffer and membrane, and a power supply capable of generating an electric current in the at least one electrophoresis unit.” As the Applicants have established proper antecedent basis, the Applicants respectfully request that the Examiner withdraw the presently pending 35 U.S.C. §112, 2<sup>nd</sup> rejection.

**Response to 35 U.S.C. §103(a) Rejections:**

Rejection of claims 1-5, 8-10, 15-32, 37-39, 41, 43-48, 63-66, and 83-87 over Hong, *et al* and Harrington, *et al*:

Claims 1-5, 8-10, 15-32, 37-39, 41, 43-48, 63-66, and 83-87 have been rejected under 35 U.S.C. §103(a) as being obvious over Hong, *et al* (Hwahak Konghak, 29(4), 1991, pp 457-462) (“Hong”) in view of U.S. 5,637,202 to Harrington, *et al* (“Harrington”). The Applicants submit that in light of the present amendments, claim 1 and all claims that depend therefrom, are in condition for allowance.

Claim 1 has been amended such that the “conductivity suppressor” is a required element and is no longer optional. In addition, claim 1 has been amended to recite that the at least one electrophoresis unit comprises a platform on which a membrane is placed wherein said membrane is no more than coextensive in length and width than said platform; and at least one wick having a first and a second end, said at least one wick disposed below and in direct contact with said membrane wherein at least the first end of said at least one wick is in contact with the buffer.

The Applicants respectfully submit that a membrane that is no more than coextensive in length and width than a platform provides an advantage over the prior art cited by the Examiner. Specifically, the membrane of the present invention will not be required to bend in order to contact the buffer. The Applicants have observed that membranes of the present invention may be damaged when bent. When current is applied to a membrane damaged by bending, overheating and charring of the membrane invariably occurs. The Applicant’s

electrophoresis system eliminates the need to bend the membrane, and thus eliminates the possibility of membrane charring or overheating due to damage from bending.

Even assuming, arguendo, that Hong and Harrington are properly combined, which is not admitted, the result of combining Hong and Harrington is not the presently claimed electrophoresis system. Neither Hong nor Harrington discloses a wick. Furthermore, neither Hong nor Harrington disclose a membrane that is no more than coextensive in length and width than a platform.

Therefore, as both Hong and Harrington are silent regarding a wick element and a membrane that is no more than coextensive in length and width than a platform, the result of combining Hong and Harrington is not the claimed electrophoresis system. As such, the Applicants respectfully request that the Examiner withdraw the presently pending 35 U.S.C. §103(a) rejection.

Independent claim 43 has been amended to recite that the electrophoretic separation method is performed using an electrophoresis apparatus which comprises at least one electrophoresis unit for containing the buffer and membrane, and a power supply capable of generating an electric current in the at least one electrophoresis unit wherein said at least one electrophoresis unit comprises a platform on which the membrane is placed wherein said membrane is no more than coextensive in length and width than said platform; and at least one wick having a first and a second end, said at least one wick disposed below and in direct contact with said membrane wherein at least the first end of said at least one wick is in contact with the buffer.

For the same reasons presented in favor of the patentability of the claim 1 electrophoresis system, the Applicants submit that a combination of Hong with Harrington, even if proper, does not render the electrophoretic separation method of claim 43 obvious. Hong and Harrington do not teach a method of electrophoretic separation wherein a wick is disposed below and in direct contact with a membrane wherein said membrane is no more than coextensive in length and width than a platform. As the recited elements of claim 43

are absent from both references, the combination of these references does not render the method of claim 43 obvious.

In addition to the above, the Examiner further alleges that claims 31 and 32 do not limit their base claim, claim 28, when fluorinated polymers are chosen from claim 28. Claims 31 and 32 have been amended to require the choice of either polyester or a vinyl polymer. Therefore, in light of the amendments to claim 31 and 32, and further in view of the amendment to claim 1, the Applicants respectfully submit that claims 31 and 32 are allowable.

The Examiner further states that independent claim 83 is coextensive in scope with "earlier method claims." In light of the Examiner's statement, the Applicants have amended claim 83 such that it now depends from claim 43. The Applicants have also deleted the reference to "separation of proteins according to their isoelectric point" in claim 83 because claim 43 encompasses all methods of separation, including isoelectric separations. Claim 83 now recites the electrophoretic method of claim 43 wherein the electrophoresis is performed in the absence of a pH gradient.

Therefore, in view of the allowability of claims 1 and 43, as discussed above, claims 2-4, 8-10, 15-32, 37-39, 41, 44-48, 63-66, and 83-87 which depend directly or indirectly from claims 1 and 43, are likewise allowable. As such, the Applicants respectfully request that the Examiner withdraw the 35 U.S.C. §103(a) rejection and allow all of the above referenced claims.

Rejection of claim 34-36 over Hong and Harrington further in view of Hiratsuka, *et al*:

Claims 34-36 have been rejected as obvious over Hong and Harrington further in view of U.S. 4,128,470 to Hiratsuka, *et al* ("Hiratsuka"). Claims 34-36 depend directly or indirectly from claim 1 and recite additional features of the Applicant's electrophoresis system. Hiratsuka does not remedy the deficiencies of Hong and Harrington as applied to

claim 1 as Hiratsuka does not teach either a platform on which a membrane is placed wherein said membrane is no more than coextensive in length and width than said platform or at least one wick having a first and a second end, said at least one wick disposed below and in direct contact with said membrane wherein at least the first end of said at least one wick is in contact with the buffer. Therefore, in view of the allowability of claim 1, as discussed above, claims 34-36 are likewise allowable.

Rejection of claim 40 over Hong and Harrington further in view of Bambeck, *et al*:

Claim 40 has been rejected as obvious in view of Hong and Harrington further in view of U.S. 4,909,918 to Bambeck, *et al* ("Bambeck"). Claim 40 depends directly from claim 1 and recites additional features of the Applicant's electrophoresis system. Bambeck does not remedy the deficiencies of Hong and Harrington as applied to claim 1, as Bambeck does not teach either a platform on which a membrane is placed wherein said membrane is no more than coextensive in length and width than said platform or at least one wick having a first and a second end, said at least one wick disposed below and in direct contact with said membrane wherein at least the first end of said at least one wick is in contact with the buffer. Therefore, in view of the allowability of claim 1, as discussed above, claim 40 is likewise allowable.

Rejection of claims 49-62 and 88-92 over Hong and Harrington further in view of Manian, *et al*:

Claims 49-62 and 88-92 have been rejected as obvious in view of Hong and Harrington further in view of U.S. 5,137,609 to Manian, *et al* ("Manian"). Claims 42-62 and 88-92 depend directly or indirectly from claim 43 and recite additional features of the Applicant's electrophoresis method. Manian does not remedy the deficiencies of Hong and Harrington as applied to claim 43, as Manian does not teach an electrophoretic method



utilizing an electrophoresis unit comprising either a platform on which a membrane is placed wherein said membrane is no more than coextensive in length and width than said platform or at least one wick having a first and a second end, said at least one wick disposed below and in direct contact with said membrane wherein at least the first end of said at least one wick is in contact with the buffer. Therefore, in view of the allowability of claim 43, as discussed above, claims 49-62 and 88-92 are likewise allowable.

Rejection of claim 67-69 over Hong and Harrington further in view of Allen:

Claims 67-69 have been rejected as obvious in view of Hong and Harrington further in view of "Allen" (International Journal of Pharmaceutics 187, 1999, p. 259-272). Claims 67-69 depend directly or indirectly from claim 43 and recites additional features of the Applicant's electrophoresis method. Allen does not remedy the deficiencies of Hong and Harrington as applied to claim 43, as Allen does not teach an electrophoresis method utilizing an electrophoresis unit comprising either a platform on which a membrane is placed wherein said membrane is no more than coextensive in length and width than said platform or at least one wick having a first and a second end, said at least one wick disposed below and in direct contact with said membrane wherein at least the first end of said at least one wick is in contact with the buffer. Therefore, in view of the allowability of claim 43, as discussed above, claims 67-69 are likewise allowable.


**Conclusion**

All claims remaining in the application are believed to be in condition for allowance.  
An early action to that end is earnestly solicited.

Respectfully submitted,

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